SmartClothing

We help you buy clothes in a smart way

3f: Final report

Sijin Chen (Amy): Research, Design

Juan Cai: Research, Design

Kai-Ting Huang: Research, Design

Rushabh Mehta: Research, Tech support

1. Problems & Solution Overview

Problems:

People want efficiently buy clothes with styles similar to fashion collections on Pinterest or Instagram. They also want their investment worth every penny by buying clothes that they would wear frequently.

Solution:

The design has two parts: 1. **A smart mirror**. 2. **An app**. These two parts can fulfill users' need on the following two levels:

- On the basic level, users can use the app to pair with the their Pinterest/Instagram account so that they can import their fashion ideas in the app. After that the system would suggest clothes with similar styles that users can purchase directly in the app.

- On the deeper level, users can identify the "high-value" clothes by tracking the wearing frequency of their existing clothes. All they have to do is to stand in front of the smart mirror everyday after dressing up. The app would further give fashion suggestions based on the identified wearing frequency together with other criteria, such as brand's sustainability score, price, material used, etc.

2. Initial Paper Prototype

Overview:

Our paper prototype has two components: The first one is the **smart phone application** and the second one is a **smart mirror**. The application is used by users to shop for suggested clothes based on their fashion collections (Instagram, Pinterest) and based on their clothes value. This value in turn is calculated from the data from the smart mirror which records which clothes the users wear.

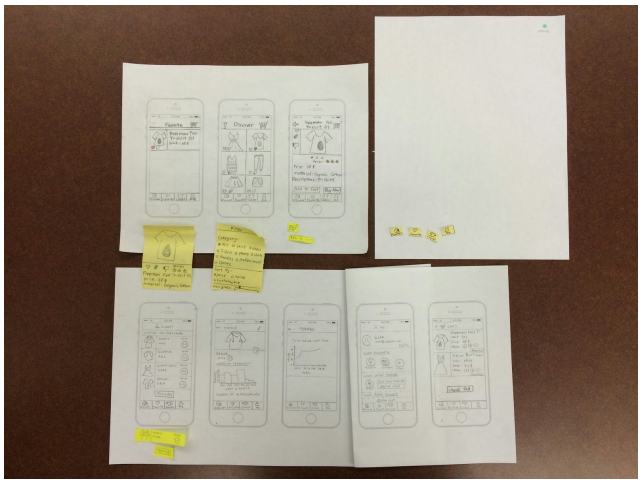


Figure 1. Paper Prototype Overview

Task1: Fashion idea collection and suggested shopping(including sustainable options)

Flow: Sign-up → Discover → Shop for clothes

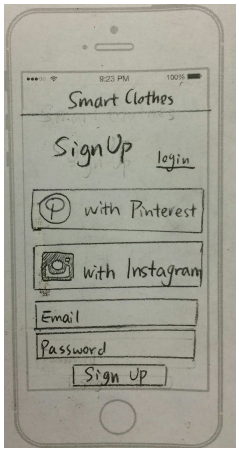


Figure 1.1

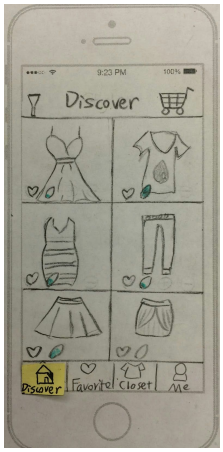


Figure 1.2

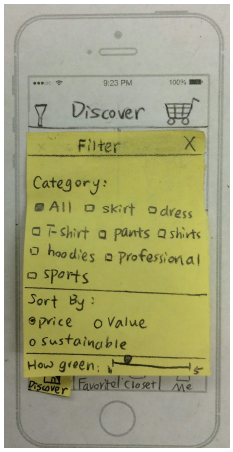


Figure 1.3

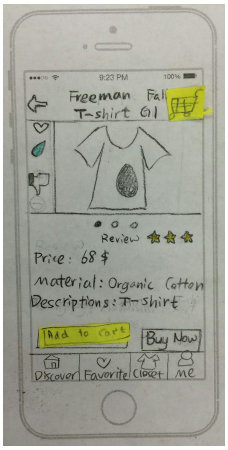


Figure 1.4

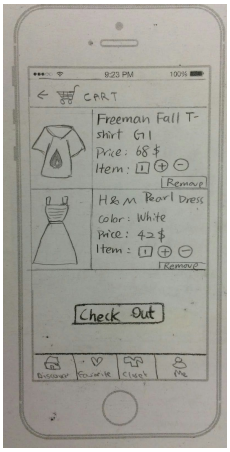


Figure 1.5

The first users sign up by Pinterest or Instagram account (Figure 1.1) and then the system will make fashion suggestions based on the imported fashion ideas (Figure 1.2). Users can apply filters on categories and sustainable level (Figure 1.3), and also look at the detailed information of each clothes (Figure 1.4). When they spot a desirable item, they can add it to shopping cart and check out (Figure 1.5).

Task2: Reduce the purchase of low-valued clothes

Flow: Pair smart mirror → Track using smart mirror → Information on Closet tab → Suggestions on Discover tab

Users first pair up the smart mirror in the me screen (Figure 2.1). After that they can track the wearing frequency by standing in front of the smart mirror every after dressing up. The data will be presented in the app on the closet screen (Figure 2.2) and the detail screen (Figure 2.3). The data will also be used to make fashion suggestion on the discover screen (Figure 1.2).

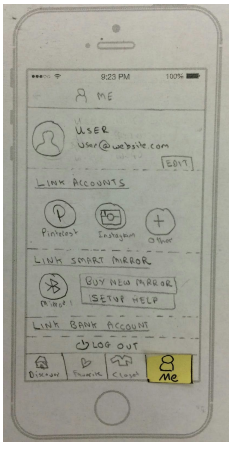


Figure 2.1

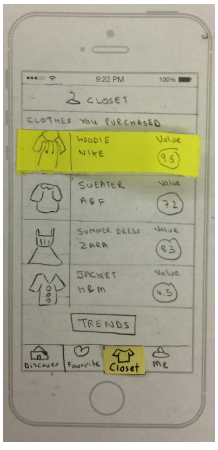


Figure 2.2

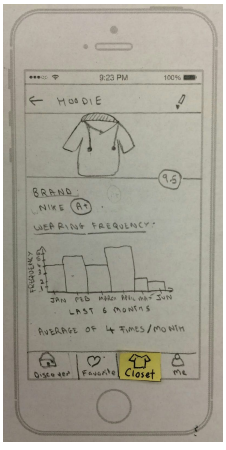


Figure 2.3

3. Testing Process

Overview:

We conducted 3 usability tests in total. Two participants are students. One is a young professional. All of them are female. For the first usability test, we did it at Hub because it's the most convenient location for the participant and us. For the last two usability tests, we chose to do at participants' home because we believed more insights can be generated when the participants are in the context of the app use scenario (at home and close to their closet).

Method:

We did the usability test in pair. One facilitated the session while the other played the computer. Both of us took notes on the interesting moments.

In each session, we firstly explained the background of the project, the objective of the design, and went through the tasks we would like the participant to perform. During the test, we observed how the participant accomplish a given task and encouraged her to describe her thought and expectation when encountering difficulties. We only gave the participant hints when they were completely stuck.

The rough script as below is how we introduced the project and tasks to participants:

> Our application is designed for users to shop for suggested clothes based on their fashion collections (Instagram, Pinterest) and based on their clothes value. This value in turn is calculated from the data from the smart mirror which records which clothes the users wear.
>
> Our design is composed of two parts; the first one is the **smart phone application** and the second one is a **smart mirror** that collects your clothes' wearing frequency automatically. Please imagine that you already have the smart mirror. Here are two tasks that we want you to perform:
>
> - Collect Fashion ideas and buy an item from the app (Fashion Idea Collection and suggested shopping)
> - Check what cloth do you rarely wear; find a way to reduce buying that kind of cloth anymore (Reduce the purchase of low-valued clothes)

How we refine the prototype:

We refined our design based on the common issues surfacing in the usability tests. For example, all participants couldn't fully understand the meaning of the "value" before we verbally explained to them, which led to our decision to add a "question mark icon" next to the unclear info. Other insights will be explained in the following testing results chapter.

4. Testing Results

Result from heuristic evaluation:

Generally speaking, the confusions of the evaluators were mainly due to the low-fi nature of the paper prototype. We quickly fixed these issues by adding more UI elements. The following are key changes with the refined screens:

Figure 3.1

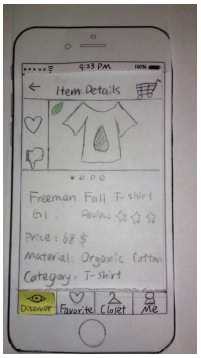


Figure 3.2

Figure 3.3

Figure 3.4

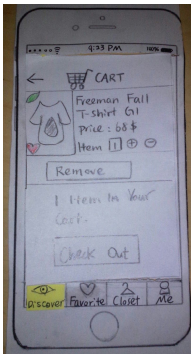


Figure 3.5

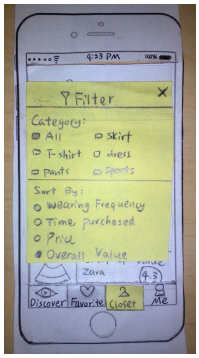


Figure 3.6

- **Visibility of system status:** Highlight the corresponding tab, because it wasn't clear to participants which page they were at (Figure 3.1)
- **Consistency and standards:** Unify the look of back buttons, because they were inconsistent (Figure 3.2)
- **User control and freedom:** Add the close button in the pop-up view so that users can go back to the previous page (Figure 3.3)
- **User control and freedom:** Make the heart icon toggle so that users can "unlike" the item if they want to (Figure 3.4)
- **Recognition rather than recall:** Add the indicator of sustainability level in the shopping cart page, because participants couldn't remember this info (Figure 3.5).
- **Flexibility & efficiency of use**: Add the filter feature in the discovery screen, because it's easier for users to find desirable clothes. (Figure 3.6)

Result from usability testing & design critique:

In general, our participants' confusion centered on the obscure meaning of elements in the app, such as the "leaf", "value", "trend". Also, the link between the smart mirror and the app was weak. The following are key changes with the refined screens:

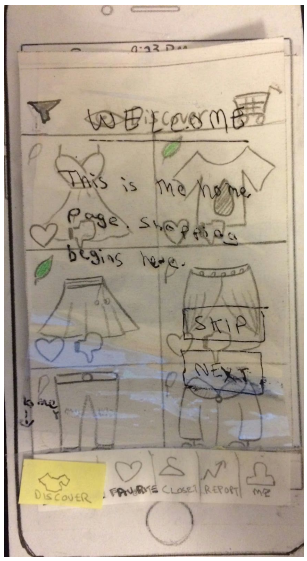
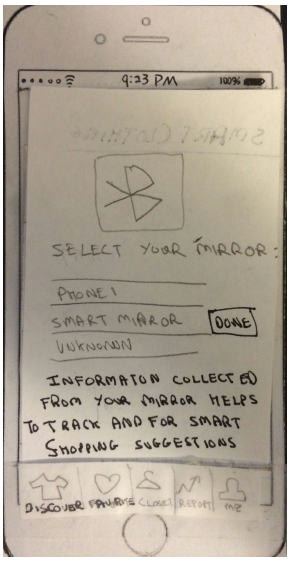


Figure 4.1



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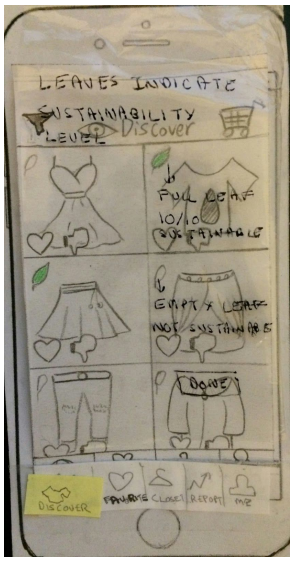


Figure 4.3

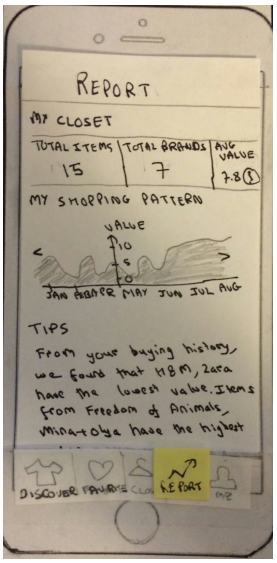


Figure 4.4

- **Incident:** The meaning of the tab is unclear to user
  Change: Make a clearer discover icon and add a tutorial page (Figure 4.1)

- **Incident:** Hard to realize the existence and function of the smart mirror
  Change: Add a new screen in the signup process to let users pair up with the smart mirror at the beginning and also to explain its purpose (Figure 4.2)

- **Incident:** The meaning of the "leaf" is confusing
  Change: In visual design, make a self-explanatory leaf icon. Also explain its meaning in the tutorial page. (Figure 4.3)

- **Incident:** The idea of the "value" is too vague
  Change: Add a question mark next to the value, which would bring out a pop-up to explain its meaning.

- **Incident:** The benefit of identifying the value and trends is obscure for users
  Change: Make Trends an independent tab and add description to explain how the value information is used by the system. (Figure 4.4)

5. Final Paper Prototype

Overview:

Our final paper prototype has two components: The first one is the **smart phone application** and the second one is a **smart mirror**. The application is used by users to shop for suggested clothes based on their fashion collections (Instagram, Pinterest) and based on their clothes value. The smart mirror is used to track the wearing frequency, by which the system can determine the clothes value.

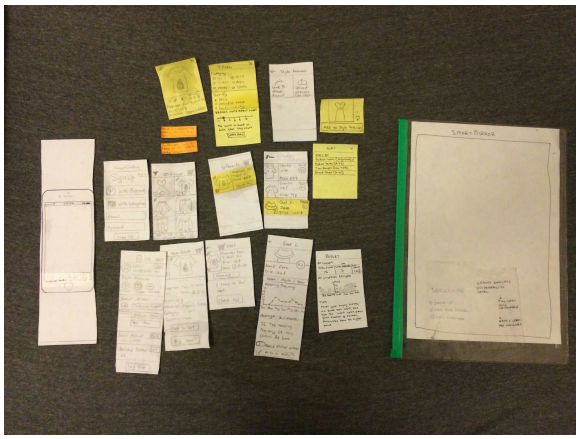


Figure 5.1: Final Paper Prototype

Task1: Fashion idea collection and suggested shopping(including sustainable options)

Flow: Sign-up → Discover → Shop for clothes

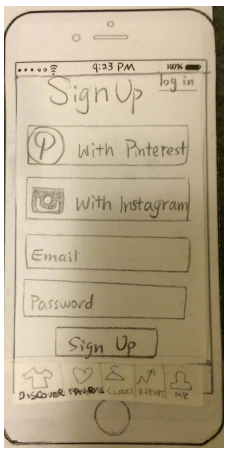


Figure 6.1

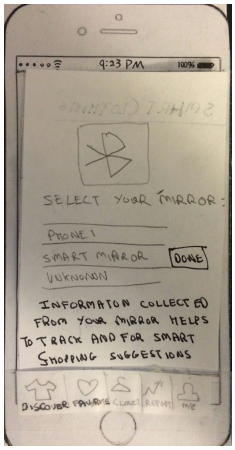


Figure 6.2

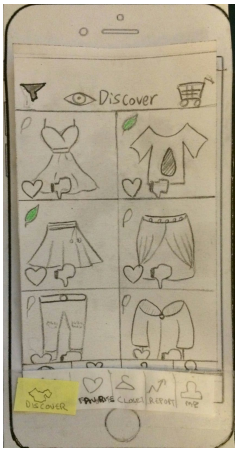


Figure 6.3

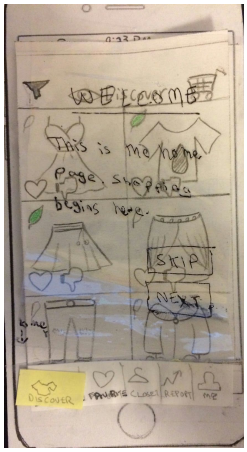


Figure 6.4

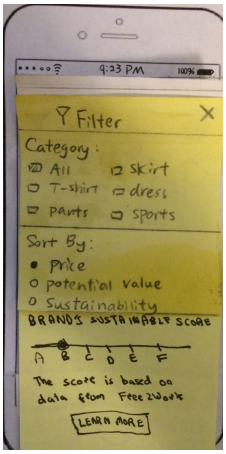


Figure 6.5

Users sign up with Pinterest or Instagram account (Figure 6.1), and then the system will ask users to set up the smart mirror (Figure 6.2). After that users will be directed to the discover screen where they can start buying clothes (Figure 6.3). Users can use the filter to assist the buying process (Figure 6.5). For first time users, the tutorial page will be displayed (Figure 6.4) to explain the main features.

Task2: Reduce the purchase of low-valued clothes

Flow: Pair smart mirror → Track using smart mirror → Information on Closet tab → Suggestions on Discover tab

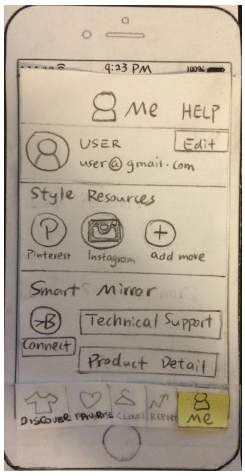


Figure 7.1

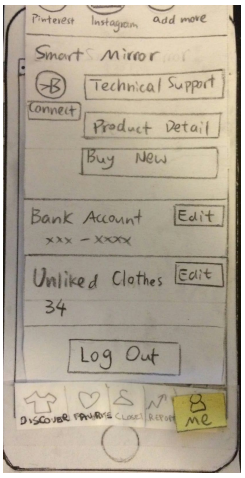


Figure 7.2

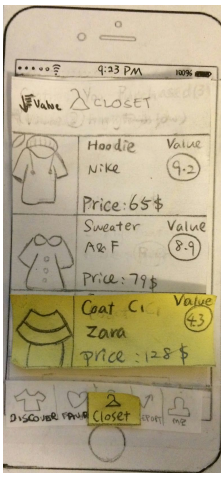


Figure 7.3

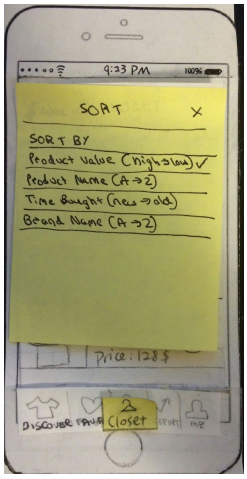


Figure 7.4

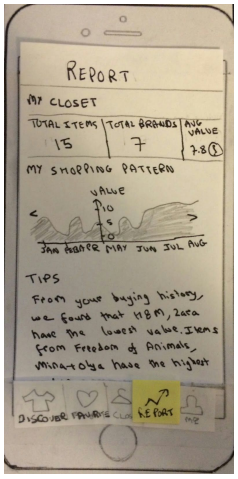


Figure 7.5

After setting up the smart mirror on the me screen (Figure 7.1 & 7.2), users can start tracking the wearing frequency of their clothes by standing in front of the smart mirror everyday after dressing up. The data will be used by the system to calculate the clothes "value" which will be displayed on the closet screen (Figure 7.3) and the report screen (Figure 7.5). On the closet screen, users can organize their clothes by selecting different sorting option (Figure 7.4).

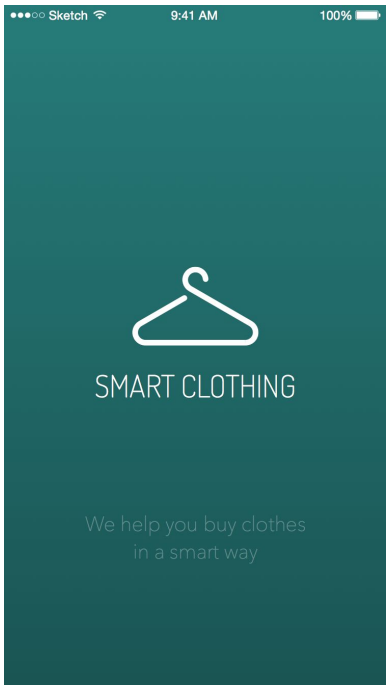
6. Digital Mockup

Overview:

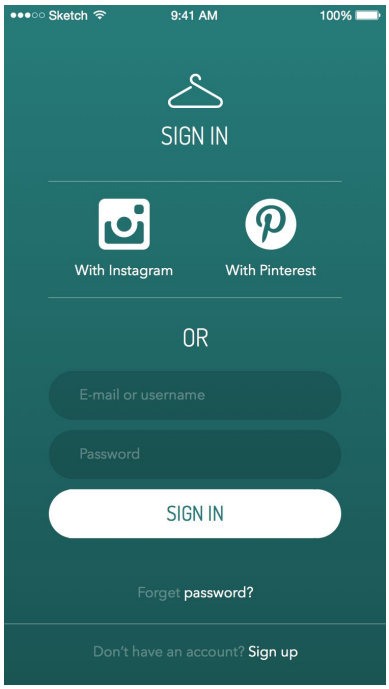
Digital prototype: https://popapp.in/projects/564d4cbd8bdce856499fd0e0/preview

SmartClothing app assists users to find desirable fashion items and to avoid buying low-value clothes in the future. The digital mockup consists of the following key screens:

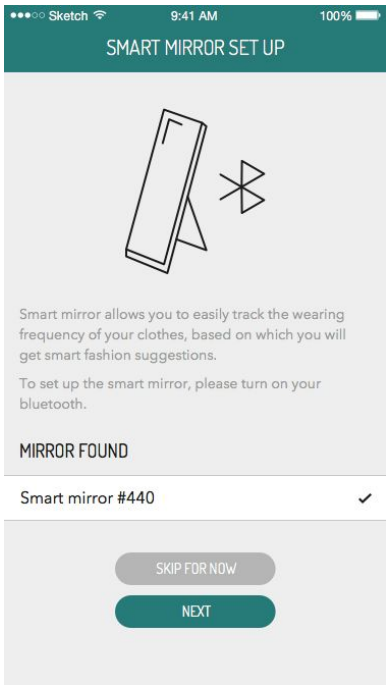
Screen 1.1: App splash screen
Screen 1.2: Sign in / sign up
Screen 1.3: Smart mirror setup
Screen 2.1: Tutorial for the Discover screen
Screen 2.2: Discover (clothes suggestions)
Screen 2.3: Filter for the Discover screen
Screen 2.4: Product detail
Screen 3.1: Favorite
Screen 4.1: Closet (user's purchased clothes)
Screen 4.2: Sort for the Closet screen
Screen 4.3: Product detail after purchase
Screen 5.1: Report
Screen 6.1: Profile



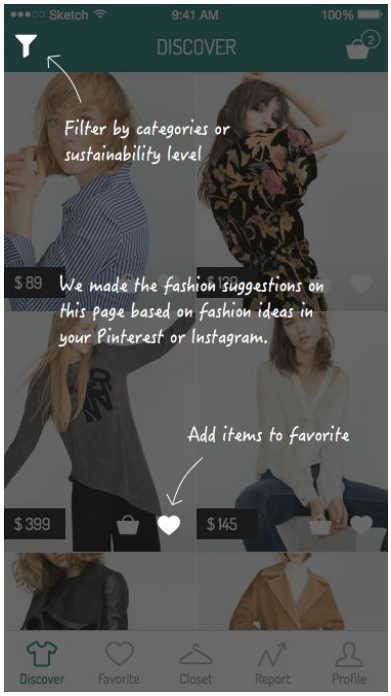
Screen 1.1



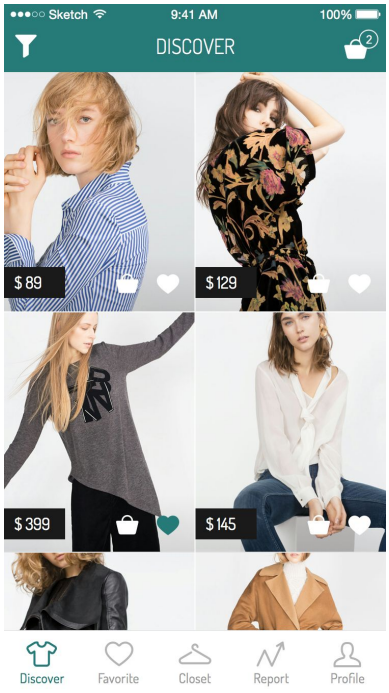
Screen 1.2



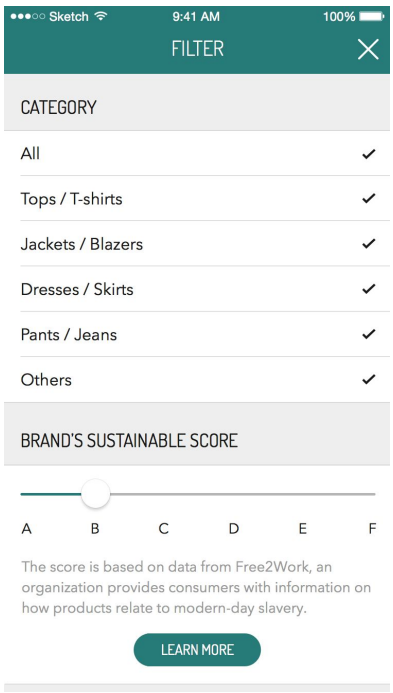
Screen 1.3



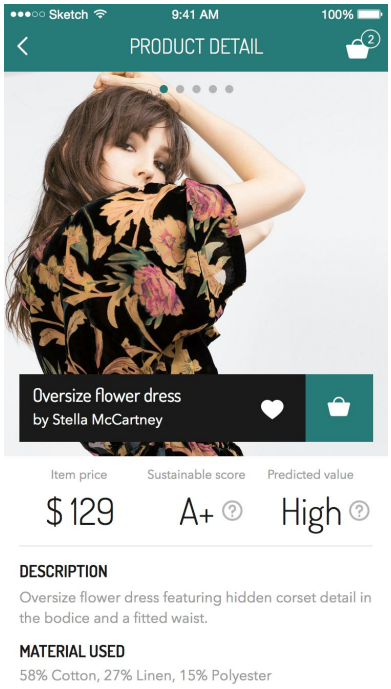
Screen 2.1



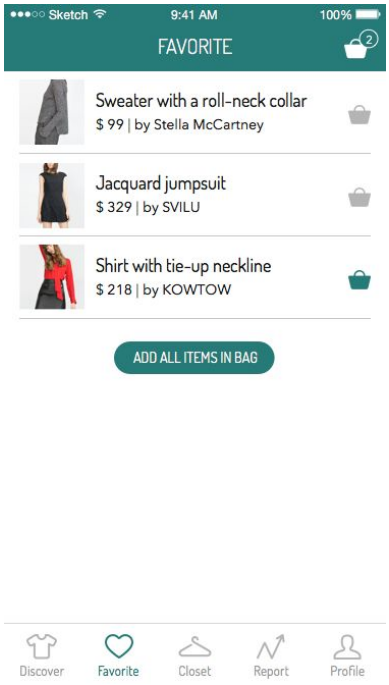
Screen 2.2



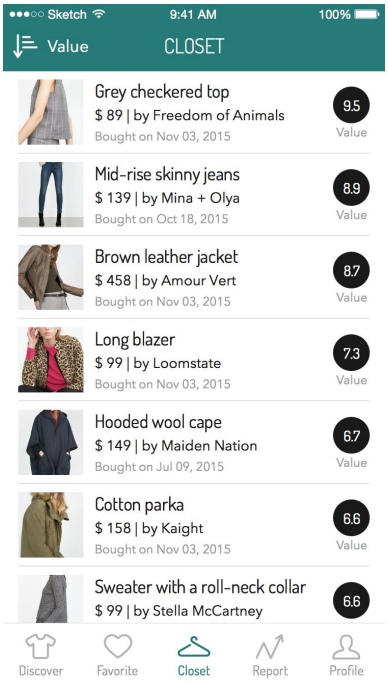
Screen 2.3



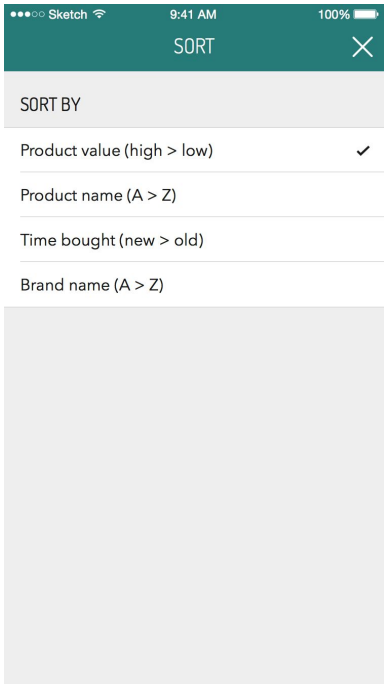
Screen 2.4



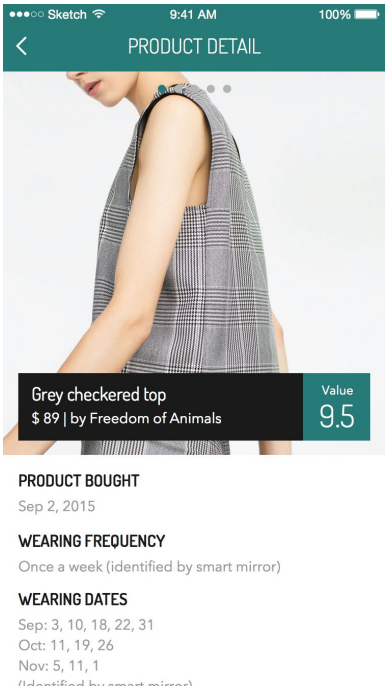
Screen 3.1



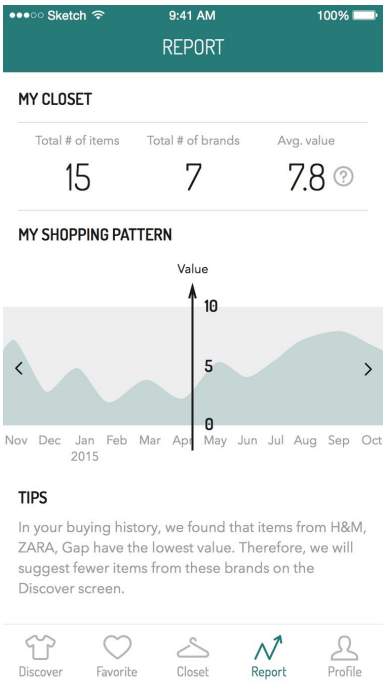
Screen 4.1



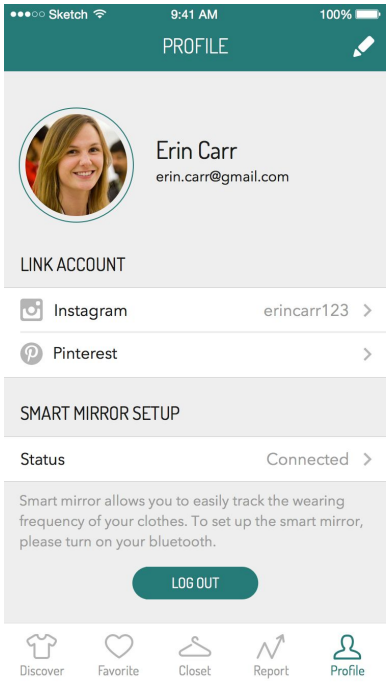
Screen 4.2



Screen 4.3



Screen 5.1



Screen 6.1

Design changes:

The following design changes were made based on the critique:

- The first one is to remove the concept of the "leaf", because we found out that even if users can recognize the icon as a leaf, it's still nearly impossible for them to associate leaf with the sustainability level.
- The second one is to make the default value of the sustainability score "F" in the filter, because in this way we won't hide any products without informing users when they first use the app.
- At last, we removed the iOS "peak" interaction, because it's simply too hard to be discovered by users.

Task1: Fashion idea collection and suggested shopping(including sustainable options)

Flow: Sign-up → Discover → Shop for clothes

After the splash screen (Screen 1.1), users will land on the sign up screen where they can pair their Pinterest or Instagram account with the app (Screen 1.2). After that, for the first time users, the system will ask them to set up the smart mirror (Screen 1.3) and then users will be directed to the discover screen where they can start buying clothes (Screen 2.2). For first time users, the tutorial page will be displayed (Screen 2.1) to explain the main features. Users can filter on the

desirable category (Screen 2.3) or look into the detail product page for more information (Screen 2.4).

Task2: Reduce the purchase of low-valued clothes

Flow: Pair smart mirror → Track using smart mirror → Information on Closet tab → Suggestions on Discover tab

User setup their smart mirror either at the signing up process (Screen 1.3) or on the Profile screen (Screen 6.1). After that users can start tracking the wearing frequency of their clothes by standing in front of the smart mirror everyday after dressing up. The data will be used by the system to calculate the clothes "value" which will be displayed on the Closet screen (Screen 4.1), the Product detail screen (Screen 4.3) and the Report screen (Screen 5.1). On the Closet screen, users can organize their clothes by selecting different sorting option (Screen 4.2). In the end, the system will use all these data to make future fashion suggestion on the Discover screen (Screen 2.2).

7. Discussion:

In this project, we've learned some key factors to achieve a good design:

First, **the involvement of users**. For example, in the contextual inquiry, as opposed to our assumption, we found out we can't just simply make a "sustainability" app because users barely think about it during their fashion purchasing process. If we didn't involve users at the first stage, chances are that all out effort might be futile.

Second, **the iteration process**. In this project, we've tried several kinds of methods to iterate the design (contextual inquiry, peer critique, heuristic evaluation, tutors' feedback). While the required time and effort vary between different methods, each time we gained some new insights based on which our design keeps improving. The process also decreased the risk of anchoring on one single angle, because we got the chance to hear from different perspectives.

Due to the tight schedule of this project, it's difficult to thoroughly explore in each iteration before moving on to the next step. For example, we could have interviewed owners of independent clothes stores to gain a more complete view before making our prototype. Nevertheless, we understand that this was still a good practice, because in the real world, time and resources are limited too. The point is to learn how to plan and execute an iterative process so that we can quickly gain useful insights within a certain time frame.